REMARKS/ARGUMENTS

Claims 3, 4, 6-41 and 68-73 are pending herein. Claims 14-41 have been allowed. Claims 8 and 10 have been amended as supported by, for example, Figs. 25-29 of the present application.

1. Claims 10-13 and 68-73 were rejected under §103(a) over Brunée in view of Ogawa (U.S. Patent No. 4,742,264) or Ogawa (U.S. Patent No. 4,805,057). To the extent that this rejection might be applied against amended claim 10, it is respectfully traversed.

Pending independent claim 10 recites, among other things, that end surface electrodes are formed on respective outer side surfaces of the actuator section and are electrically connected to terminals that are provided on a surface of an outermost layer of the piezoelectric/electrostrictive (P/E) layers and arranged substantially co-planar with respect to one another. Pending claim 10 has been amended to clarify that the electrode films are substantially rectangular, have a constant and continuous width dimension and extend fully over a width dimension of the respective P/E layers.

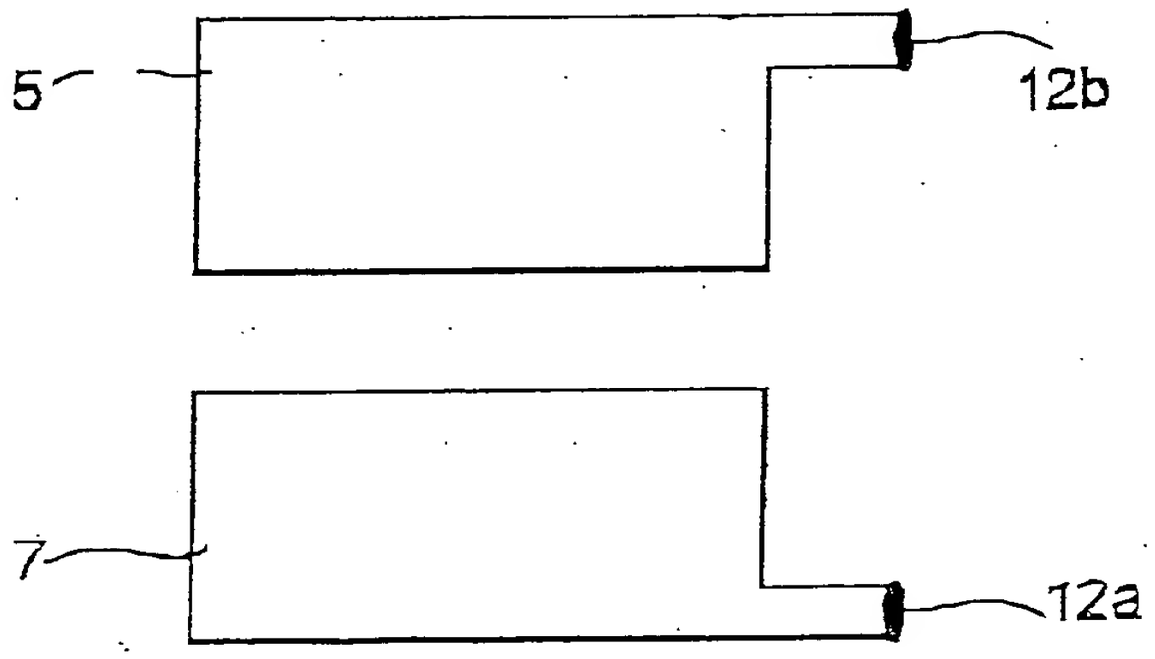
Fig. 2 of Ogawa '264 shows that end surface electrodes 4a and 4b electrically connect inner electrodes 3a and 3c, and 3b and 3d, respectively. As discussed above, pending independent claim 10 recites that the electrode terminals are arranged substantially co-planar with respect to one another. It is respectfully submitted that Ogawa's end surface electrodes 4a and 4b function as the electrode terminals for the device disclosed in Ogawa '264, and thus Ogawa's electrode terminals are arranged in planes that are parallel with respect to one another. Those terminals are not, however, "arranged substantially co-planar with respect to one another," as recited in pending claim 10. The PTO has provided no reason why one skilled in the art would have been motivated to completely change the structure of Ogawa

'264 to meet this claimed relationship. The §103(a) rejection over Ogawa '264 should be withdrawn for this reason alone.

Moreover, as is clearly shown in the drawings of Ogawa '264, the P/E elements include disk-shaped ceramic plates and electrode films. Accordingly, in addition to the above-discussed deficiency, Ogawa '264 also fails to disclose or suggest electrode films that "are substantially rectangular having a constant and continuous width dimension and extending fully over a width dimension of said respective piezoelectric/electrostrictive layers," as now recited in pending claim 10. It would require a complete redesign of Ogawa's '264 structure to meet this claim limitation.

Fig. 15 of Ogawa '057 shows that connecting electrode 11 electrically connects internal electrodes 4, 6 and 8. Connecting electrode 13 electrically connects conductive parts 12a and 12b to one another, which, in turn, electrically connects internal electrodes 5 and 7.

Although not explicitly stated in the Office Action, it appears that the PTO's position is that electrodes 4 and 13 shown in Fig. 15 of Ogawa '057, for example, are capable of functioning as electrode terminals in Ogawa's device. Ogawa '057 discloses a structure in which the internal electrodes 5 and 7 are first supplied with opposite voltage potential values of V and -V to conductive parts 12a and 12b, which are joined via common electrode 13, to polarize the ceramic layers. Accordingly, as is apparent from Figs. 15 and 16 of Ogawa '057, the plan view of electrodes 5 and 7 would appear as shown below.



As discussed above, with reference to Figs. 25-29 of the present application, pending independent claim 10 has been amended to clarify that electrode films 28 and 30 are substantially rectangular and have a constant and continuous width dimension and extend fully over the width dimension of the respective P/E layers. Applicants respectfully submit that it is clear from the discussion above with respect to the operation of the device disclosed in Ogawa '057 and the plan view of Ogawa's electrodes 5 and 7, that Ogawa '057 does not disclose or suggest employing electrode films that "are substantially rectangular having a constant and continuous width dimension and extending fully over a width dimension of said respective piezoelectric/electrostrictive layers," as recited in pending claim 10. The §103(a) rejection over Ogawa '057 should be withdrawn for this reason alone.

Moreover, as is illustrated by the above plan view of Ogawa's electrodes 5 and 7, Ogawa '057 discloses the use of a discontinuous electrode layer being formed on portions of the dielectric layers. At such locations where the electrodes are not completely formed on the dielectric layer (i.e., in the vicinity of conductive parts 12a and 12b), an unbalanced or non-symmetrical P/E element results, which, in turn, tends to result in an unwanted bending action away from the desired displacement direction during the actuation of the P/E device. In contrast to Ogawa's unbalanced or non-symmetrical P/E elements, pending claim 10 recites a structure in which substantially no non-symmetrical or unwanted bending occurs during actuation of the P/E device because the electrode films are formed fully on the dielectric layer in the width dimension.

In view of all of the foregoing, reconsideration and withdrawal of the §103(a) rejection over the Ogawa references are respectfully requested.

2. Claims 3, 4 and 6-19 [sic, claims 6-9] were rejected under §103(a) over Brunée in view of the Ogawa references (discussed above) and further in view of Scarpa or Keem.

The PTO alleges that Scarpa or Keem "teach providing rough interface surfaces to form a stronger joint" (see Office Action page 2). Pending independent claim 8 has been amended to clarify that one or more holes, which are formed in at least a portion of the thin plate sections on which the P/E element is formed, are formed ***entirely through the thin plate sections*** in the thickness direction. It is respectfully submitted that neither of Scarpa nor Keem disclose or suggest that any holes are, or should be, formed ***entirely through the thin plates***, as claimed.

In view of all of the foregoing, reconsideration and withdrawal of the §103(a) rejection are respectfully requested.

The PTO is requested to confirm receipt and consideration of the Information Disclosure Statements filed on: November 27, 2001; August 12, 2002; and December 12, 2002.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

August 15, 2003
Date

Stephen P. Burr
Reg. No. 32,970

SPB/SC/tlp

BURR & BROWN
P.O. Box 7068
Syracuse, NY 13261-7068

Customer No.: 025191
Telephone: (315) 233-8300
Facsimile: (315) 233-8320